PERITYLE (ASTERACEAE), NEW SPECIES AND NOTES

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Abstract

Three new species of *Perityle* (Asteraceae) are described and their immediate relationships identified. Chromosome numbers for the new species and five other taxa and notes about *Perityle* are included.

Following the monographic studies of *Perityle* (Powell 1969, 1973, 1974), continuing investigations have resulted in additional information about the genus. Most species of *Perityle* occur as perennials in crevices of rock bluffs and have followed a pattern of speciation by geographic isolation. Consequently it is of no surprise that three additional species have been discovered in several under-collected areas. Also included in this report are chromosome numbers and other miscellaneous information about various species of *Perityle*.

Perityle fosteri A. M. Powell, sp. nov.

Suffrutices 6–15 cm alti dense pubescentes pilis brevibus; laminae foliorum 0.8–1.2 cm longae 0.5–1.2 cm latae lobatae saepe tripartitae; flores radiati nulli; flores disci ca. 10 corollis pallide flavis ca. 4.5 mm longis; achaenia 1.5–1.6 mm longa; pappus setiformis setis ca. 20 tenuibus inaequalibus; chromosomatum numerus $n = 17$. Fig. 1.

Plants suffruticose, 6–15 cm high, in mats or rock faces, profusely branched and leafy, rather densely short-pubescent, the leaves mostly alternate, the blades 0.8–1.2 cm long, 0.5–1.2 cm wide, lobed, basically tripartite, short-pubescent and gland-dotted; petioles 4–8 mm long; heads discoid, borne on short peduncles, clustered among the upper leaves, funnelform-cylindric, 6–7 mm long, ca. 4 mm wide; phyllaries 8, 5–6 mm long, 0.8–1.3 mm wide; disc flowers ca. 10; disc corollas cream-color to pale yellow, ca. 4.5 mm long, the tube ca. 1 mm long, glandular-pubescent, the throat ca. 3 mm long, tubular-funnelform, the lobes acute, 0.5 mm long; anthers ca. 2.3 mm long; styles 1–1.2 mm long, slender, flattened, truncate, minutely pubescent, achenes 1.5–1.6 mm long, nearly oblong, flattened, short pubescent on faces and margins; pappus of ca. 20 slender, unequal bristles, these minutely antrorse-ciliate; chromosome number, $n = 17$.

Type: Texas, Culberson Co., Apache Mts., Panther Canyon, lime-

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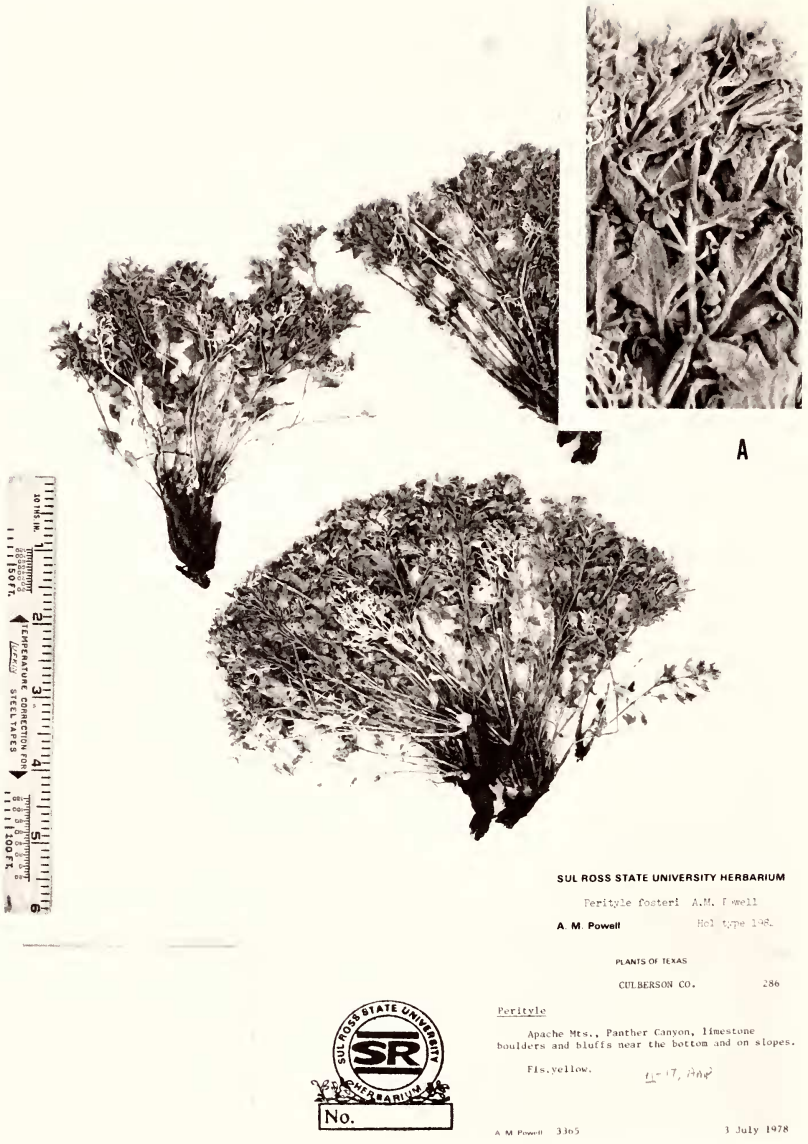

FIG. 1. Holotype of *Peritule fosteri* (*Powell 3365*). A. Inset is close-up of upper branches.

stone boulders and bluffs, 3 Jul 1978, *A. M. Powell 3365* (Holotype: SRSC; isotypes: TEX, to be distributed).

PARATYPE: Apache Mts., bluffs of upper slopes of Panther Canyon, 4 Jul 1978, *Weedin 1188*. Known only from the type locality.

Perityle fosteri is the sixth species of sect. *Pappothrix* (Powell 1969) and is most closely related to *P. rupestris*. *Perityle fosteri* is best distinguished by its tripartite leaves, pale yellow disc corollas, and distribution. The Apache Mountains are a small range isolated from the Guadalupe Mountains and the Sierra Diablo (locality of *P. quinqueflora*) to the north and west, and from the Davis Mountains (locality of *P. rupestris*) is the southeast. Panther Canyon, the type locality, is a rather deep and protected canyon on the east end of the Apache Mountains where *P. fosteri* occurs in small mats on rock faces in the manner of the more widespread *P. rupestris*.

The species name honors J. B. (Jap) Foster, long-time rancher in Culberson County. Mr. Foster, from a pioneer family, began his own operation in 1909 with ranch land that included the Apache Mountains. In Trans-Pecos Texas where private land is predominant, plant habitats are usually best protected by ranches, and landowners, exemplified by Mr. Foster, should be recognized for their conservation.

Perityle huecoensis A. M. Powell, sp. nov.

Suffrutices 10–20 cm alti dense pubescentes pilis brevibus; laminae foliorum 0.7–1.2 cm longae 0.7–1 cm latae ovatae vel ovato-deltoideae vel ovato-rhomboideae; flores radiati 3–5 ligulis flavis 2.5–3 mm longis; flores disci 11–13 corollis flavis ca. 3 mm longis; achaenia 2.8–3.2 mm longa; pappus saepe 3-meris setis longioribus 2, 1–2.5 mm longis, seta breviore solitaria; chromosomatum numerus $n = 17$. Fig. 2.

Plants suffruticose, 10–20 cm high, densely short-pubescent; leaves opposite or alternate, the blades 0.7–1.2 cm long, 0.7–1 cm wide, short-pubescent, gland-dotted, subcoriaceous, ovate to ovate-deltoid or ovate-rhombic, the margins entire to serrate lobed; heads loosely aggregated on peduncles ca. 1 cm long; involucres somewhat funnelform, heads 5–6.5 mm long, florets ca. 14; phyllaries 4–5 mm long, 0.6–1 mm wide; ray flowers 3–5, ligules yellow, 2.5–3 mm long, ca. 1.5 mm wide; disc flowers 11–13, corollas yellow, ca. 3 mm long, the tube ca. 1.3 mm long, the throat ca. 1 cm long, markedly expanded to campanulate-funnelform, the lobes ca. 0.7 mm long; style branches 1.2–1.5 mm long, subulate and pubescent; anthers ca. 1.5 mm long; achenes 2.8–3.2 mm long, linear-lanceolate, flattened, minutely pubescent on faces and margins; pappus typically of 2 longer bristles and 1 shorter, the longest 1.0–2.5 mm long, or with 2–3 longer bristles and 2–4 shorter bristles, the bristles slender and antrorse-ciliate, often caducous; chromosome number, $n = 17$.

FIG. 2. Holotype of *Perityle huecoensis* (*McCarten and Van Devender 2508*). A. Inset is close-up of capitulescence (see arrow).

TYPE: Texas, El Paso Co., North Hueco Mts., Hueco Tanks area, Navar Ranch, ca. 31°54′N, 106°07′W, 24 Sep 1977, *McCarten and Van Devender 2508* (Holotype: SRSC; isotype: TEX). Known only from the type locality.

Perityle huecoensis belongs in sect. *Laphamia* (Powell 1973), where it apparently is most closely related to *P. staurophylla,* which has subcruciform leaves. The new taxon is distinguished by its ovate to ovate-deltoid leaves, small heads with ca. 12 disc florets, disc corollas ca. 3 mm long with markedly expanded throats, and short pappus bristles. *Perityle huecoensis* exhibits some resemblance to *P. lindheimeri* of central Texas, a relationship that is further discussed elsewhere (Powell 1973).

Perityle batopilensis A. M. Powell, sp. nov.

Suffrutices 10–20 cm alti dense pilosi vel villosi; laminae foliorum 0.9–2 cm longae 1–2 cm latae deltoideae vel deltoideo-cordatae; radiati nulli; flores disci 45–50 corollis flavis demum rubris 4.5–5.5 mm longis; achaenia 2.5–3 mm longa; pappus nullus; chromosomatum numerus $n = 17$. Fig. 3.

Plants suffruticose, 10–20 cm high, densely pilose to villous, viscid; leaves opposite or alternate, the blades 0.9–2 cm long, 1.2 cm wide, pilose to villous with shorter glandular hairs, deltoid to deltoid-cordate, the margins serrate-lobed; heads discoid, on short peduncles, 1–3 cm long, clustered among or slightly above upper leaves; involucres cylindric, ca. 9 mm long, 4–4.5 mm wide; phyllaries ca. 21, 5–5.5 mm long, 1–1.5 mm wide; disc flowers 45–50, corollas yellow, upper parts reddish at maturity, 4.5–5.5 mm long, the tube 1–1.2 mm long, glandular-pubescent, the throat 2.5–3 mm long, tubular-funnelform, the lobes acute, ca. 1 mm long; anthers ca. 2 mm long; styles ca. 2 mm long, slender, subulate; achenes 2.5–3 mm long, linear-oblong, flattened, sparsely short-pubescent on faces and callous margins; pappus absent; chromosome number, $n = 17$.

TYPE: Mexico, Chihuahua, Mpio. Batopilas, n. side of Barranca de Batopilas between La Bufa and Quirare, 1590 m, 26 Mar 1979, *Bye et al. 9276* (Holotype: COLO; isotype: SRSC).

PARATYPES: Mexico, Chihuahua, Mpio. Batopilas, along arroyo Wimivo (=Arroyo Samachige) between Wimivo and Rio Batopilas on n. side of Barranca de Batopilas, 990–890 m, 28 Feb 1973, *Bye 3432B* (COLO, SRSC); also possibly *Bye 3210* (COLO), which looks similar (R. A. Bye, pers. comm.).

Collections of *P. batopilensis* were obtained by R. A. Bye and associates during the course of floristic studies of the Sierra Madre Occidental in northwestern Mexico. In my view *P. batopilensis* is but one of the taxa that originated from a formerly widespread entity in

FIG. 3. Isotype of *Peritule batopilensis* (*Bye et al. 9276*). A. Inset is close-up of capitulescence (see arrow).

northern Mexico and adjacent southwestern United States. Other described members of this complex are *P. lemmoni, P. dissecta, P. castillonii* (Powell 1973), and *P. carmenensis* (Powell 1976). Geographically *P. batopilensis* is closest to *P. lemmoni* from which it is

distinguished by its deltoid to deltoid-cordate leaves that are serrate-lobed but not dissected, more densely pilose herbage, 18–20 phyllaries, achenes that are epappose, slightly narrower, and nearly glabrous, and longer disc corollas with lanceolate lobes.

Chromosome numbers. The chromosome counts reported here were obtained through standard acetocarmine squashes of microsporocytes. All are consistent with previously established base numbers. Vouchers are deposited in SRSC and elsewhere. Other significant chromosome number reports for *Perityle* are found in Powell and Powell (1978).

Perityle batopilensis, $2n = 17_{II}$. Mexico, Chihuahua, n. side of Barranca de Batopilas, *Bye et al. 9276,* greenhouse progeny. One bivalent was notably smaller than the other 16 bivalents. Counts for other members of this species alliance (see above) are also diploid, but in addition $2n = 34_{II}$ has been reported for *P. dissecta* (Powell 1973).

Perityle fosteri, $2n = 17_{II}$. Texas, Culberson Co., Apache Mts., *Powell 3365, Weedin 1188.* Polyploidy is widespread in the related species, *P. rupestris* (Powell 1969).

Perityle huecoensis, $2n = 17_{II}$. Texas, El Paso Co., North Hueco Mts., *McCarten and Van Devender 2508,* greenhouse progeny. The bivalents are heteromorphic with $2–3_{II}$ larger and $2–3_{II}$ smaller than the others.

Perityle leptoglossa, Harv. & Gray in A. Gray. $2n = 17_{II}$. Mexico, Sonora, Palm Canyon, 17 mi se. of Magdalena, *Van Devender s.n.,* greenhouse progeny.

Perityle lineariloba Rydb., $2n = 17_{II}$. Mexico, Sonora, near Guiricoba, *Miller and Leuck 819.* In a few cells 2–3 round fragments or univalents are present with the 17 bivalents. This is the first count for *P. lineariloba,* previously known only from the type locality at San Ramon, Durango, and $2n = 17_{II}$ is consistent with other numbers known for the white-rayed complex (Powell 1974).

Perityle megalocephala var. *intricata* (Brandeg.) Powell, $2n = 17_{II}$. Nevada, Nye Co., 0.5 mi nw. of Checkpoint Pass, Red Mountain, Nevada Test Site, *Cochrane 744,* greenhouse progeny. Of the three varieties recognized for this species (Powell 1973), chromosome numbers were previously known for two of them, var. *megalocephala* ($2n = 17_{II}$) and var. *oligophylla* ($2n = 34_{II}$), but this is a first report for var. *intricata.* The variety *intricata* was poorly known taxonomically (Powell 1973) and poorly represented in herbaria until recently when several collections were obtained by Susan Cochrane on the Nevada test site. Also, a recent collection (*Castagnoli, Nevers, and Stone 419*) from the Kingston Range, San Bernadino and Inyo Counties, California, appears to be nearly intermediate between var. *intricata* and var. *oligophylla.* The latter collection supports the recognition of var. *intricata* as a variety of *P. megalocephala* and tends to negate the reference by Powell (1973) that future studies may show var. *intricata* to warrant specific status.

Perityle microglossa var. *saxosa* (Brandeg.) Powell, $2n$ = ca. 17_{II}. Mexico, Chihuahua, Mpio. Batopilas, Rio Batopilas e. of La Bufa, *Bye et al. 9216* greenhouse progeny; possibly $2n = 16_{II}$ plus 2_{I}. The label of *Bye et al. 9216* describes the specimen as "annual" although another collection of this taxon, *Bye et al. 9190,* from Mpio. Batopilas, is labeled "small woody-based plant." The seed progeny of *Bye et al. 9216* in the greenhouse developed into a self-incompatible woody-based perennial, tending to support the hypothesis (Powell 1974) that var. *saxosa* is a perennial, diploid, self-incompatible ancestor of the annual polyploid, self-compatible weed, *P. microglossa* Benth. var. *microglossa*.

Perityle socorrensis Rose, $2n$ = ca. 19_{II}. Mexico. Socorro Island, Cabo Middleton, *Moran 25535,* greenhouse progeny. The count was most consistently $2n = 19_{II}$, but possibly $2n = 17–20_{II}$ in that the heteromorphic chromosomes, particularly several smaller bivalents, were difficult to interpret. The related species *P. crassifolia* also is $2n = 19_{II}$ (Powell 1974).

Notes. Several collections of *P. aurea* Rose (Mexico, Sonora, Tiburon Island, *Fegler 12205, 15727, 15733*) increase the known distribution of this restricted species (Powell 1974). Both *P. vitreomontana* Warnock and *P. cinerea* (A. Gray) Powell were early considered for rare and endangered species status, but my recent observations indicate that the species are rather common in their restricted areas of distribution (Powell 1969) and are at present not threatened or endangered. *Perityle cernua* (Greene) Shinners was reported only from Dripping Springs Canyon, Organ Mountains, New Mexico (Powell 1969), but more recent collections primarily by T. K. Todsen and R. Spellenberg have shown the plant to occur in other localities in the Organ Mountains (Fillmore Canyon, Long Canyon, just e. of Peña Blanca, sw. of Organ Needle; 1800–3000 m; specimens at NMC).

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